

Commonwealth of Kentucky
Division for Air Quality
STATEMENT OF BASIS / SUMMARY

Conditional Major, Operating
Permit: F-20-035
Kentucky Smelting Technology, Inc.
140 Bellafato Drive
Paris, KY 40361
August 25, 2020
Vahid Bakhtiar, Reviewer
SOURCE ID: 21-017-00034
AGENCY INTEREST: 51005
ACTIVITY: APE20200001

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SECTION 1 – SOURCE DESCRIPTION

SIC Code and description: 3341, Secondary Smelting and Alloying of Aluminum

Single Source Det. ☒ Yes ☐ No If Yes, Affiliated Source AI: 290

Source-wide Limit ☒ Yes ☐ No If Yes, See Section 4, Table A

28 Source Category ☐ Yes ☒ No If Yes, Category:

County: Bourbon

Nonattainment Area ☒ N/A ☐ PM₁₀ ☐ PM_{2.5} ☐ CO ☐ NO_x ☐ SO₂ ☐ Ozone ☐ Lead

If yes, list Classification:

PTE* greater than 100 tpy for any criteria air pollutant ☒ Yes ☐ No

If yes, for what pollutant(s)?

☒ PM₁₀ ☒ PM_{2.5} ☐ CO ☐ NO_x ☐ SO₂ ☐ VOC

PTE* greater than 250 tpy for any criteria air pollutant ☒ Yes ☐ No

If yes, for what pollutant(s)?

☒ PM₁₀ ☒ PM_{2.5} ☐ CO ☐ NO_x ☐ SO₂ ☐ VOC

PTE* greater than 10 tpy for any single hazardous air pollutant (HAP) ☒ Yes ☐ No

If yes, list which pollutant(s): HCl

PTE* greater than 25 tpy for combined HAP ☒ Yes ☐ No

*PTE does not include self-imposed emission limitations.

Description of Facility:

Kentucky Smelting Technology, Inc. (KST) (formerly Toyota Tsusho America) is a secondary aluminum processing plant in Paris, KY. This plant processes return scrap, in the form of machining chips, third party scrap, recycled secondary ingot (RSI) and scrap wheels from a neighboring plant (Central Motor Wheel of America, Inc.), as well as primary aluminum with alloy materials. KST provides molten aluminum back to the neighboring facility for use in their die casting operations.

SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM

Permit Number: F-20-035

Activities: APE20200001

Received: 4/24/2020

Application Complete Date(s): 7/7/2020

Permit Action: ☐ Initial ☒ Renewal ☐ Significant Rev ☐ Minor Rev ☐ Administrative

Construction/Modification Requested? ☐ Yes ☒ No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action ☐ Yes ☒ No

Description of Action:

Kentucky Smelting Technology, Inc. (KST) submitted an application on April 24, 2020, to renew their Conditional Major permit F-15-025 R1. With this permit renewal F-20-035, the Division updated and made formatting changes throughout the permit to be consistent and clear. No other changes have been requested by KST.

F-20-035 Emission Summary			
Pollutant	* 2019 Actual (tpy)	**PTE F-20-035 (tpy)	***Allowable (tpy)
CO	12.19	27.53	
NO _x	14.52	41.20	
PT	14.70	28.06	< 90
PM ₁₀	11.76	23.03	< 90
PM _{2.5}	8.97	17.78	< 90
SO ₂	0.087	0.603	
VOC	2.22	6.77	
Lead	---	0.00016	
Greenhouse Gases (GHGs)			
Carbon Dioxide	17,419	39,032	
Methane	0.30	0.74	
Nitrous Oxide	0.29	0.08	
CO ₂ Equivalent (CO ₂ e)	17,513	39,073	
Hazardous Air Pollutants (HAPs)			
D/F	0	0.000000035	
Formaldehyde	0	0.026	
HCl	0.674	3.74	< 9
Toluene	0	0.0017	
Xylenes (Total)	0	0.00004	
Combined HAPs	1.914	4.356	< 22.5

* Based on 2019 KYEIS report.

** This includes control devices as required by the permit.

***Source-wide limits of 90 tpy or less for PM/PM₁₀/PM_{2.5}, 9 tpy or less for individual HAP and 22.5 or less for combined HAPs to remain a conditional major source.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

EU01: Group 1 Melting Furnaces (EP01-01, EP01-02, & EP01-03)				
Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
Opacity	20% opacity	401 KAR 59:010, Section 3(1)(a)	N/A	Weekly qualitative observations & recordkeeping
PM	For process weight rates: • 0.50 ton/hr or less: 2.34 lb/hr • up to 30.00 tons/hr: $E = 3.59 * P^{0.62}$	401 KAR 59:010, Section 3(2)	AP-42, Section 12.8	Monthly emission calculations, associated control efficiency, manufacturer's guarantee
D/F	15 µg of D/F TEQ per Mg	40 CFR 63.1505(i)(3)	8/2015 stack test for reverberatory furnaces; 8/2019 stack test for rotary furnace	Initial Compliance testing, monitoring, recordkeeping, and reporting

Initial Construction Date:

Reverberatory melting furnaces #1 & #2: 1/1/2005; Rotary melting furnace: 11/25/2013

Process Description:

EP01-01 & EP01-02 Reverberatory Melting Furnaces #1 & #2

EP01-03 Rotary Melting Furnace

The plant operates three natural gas fired melting furnaces. Two furnaces are equipped with a sidewall for charging aluminum scrap via conveyor. Additionally, aluminum ingot, T-bar, sows or other large aluminum feed can be charged directly via preheat pusher into the main hearth. Molten aluminum is circulated from the hearth via pump to the sidewall, which melts the scrap charged to the sidewall. Nitrogen and chlorine gas are used as the fluxing agent, which is added in the sidewall through the molten aluminum pump. Exhaust from the melting and fluxing in the sidewall is controlled by a lime-injected baghouse (BH #1), while natural gas combustion emissions from the hearth are vented to the atmosphere. Particulate emissions from the skimming of the main hearth and sidewall are controlled by the lime-injected baghouse. The baghouse has 95% control efficiency for PM emissions and 90% control efficiency for HCl emissions.

The third furnace is a rotary melting furnace for recycling scrap aluminum and dross. Exhaust from rotary furnace is also controlled by a lime-injected baghouse (BH #2). The baghouse has 99.9% control efficiency for PM emissions and 95% control efficiency for HCl emissions.

Per 40 CFR 63, Subpart RRR, these melting furnaces are classified as Group 1 Furnaces.

Max Process Rate: 9.13 tons/hr for each reverberatory melting furnace
5.1 tons/hr for rotary melting furnace

Maximum Burner Capacity: 28 MMBtu/hr for each reverberatory melting furnace
14 MMBtu/hr for rotary melting furnace

Control Device: Lime-injected baghouse #1 for Reverberatory melting furnaces #1 & #2
Lime-injected baghouse #2 for the Rotary melting furnace

EU01: Group 1 Melting Furnaces (EP01-01, EP01-02, & EP01-03)

Applicable Regulations:

401 KAR 59:010, *New process operations*, applies to each affected facility, associated with a process operation, which is not subject to another emission standard with respect to particulates, commenced on or after July 2, 1975.

401 KAR 63:002, Section 2(4)(ccc), **40 C.F.R. 63.1500 to 63.1519, Tables 1 to 3 and Appendix A (Subpart RRR)**, *National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production*, applies to each new secondary aluminum processing unit, containing one or more group 1 furnace emission units processing other than clean charge located at a secondary aluminum production facility that is an area source of HAPs as defined in 40 CFR 63.2.

Comments:

D/F and HCl emissions for two reverbatory melting furnaces and one rotary melting furnace are calculated using emission factors from the last stack test conducted on August 11, 2015 and August 13, 2019, respectively. PM emissions are calculated using emission factors from AP-42 Table 12.8-2.

EP #03: Emergency Generator

Initial Construction Date: 10/30/2018

Process Description:

Engine Model: CAT C-18

Type: 6 cylinders

Max HP: 804.3

Fuel consumption: 42.7 gal/hr at 100% load

Power Rating: 600 kWe/750 kVA

Displacement: 18.13 L

Fuel: Diesel

Applicable Regulations:

401 KAR 60:005, Section 2(2)(dddd), **40 C.F.R. 60.4200 to 60.4219, Tables 1 to 8 (Subpart IIII)**, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*, applies to stationary compression ignition (CI) internal combustion engines (ICE) that commence construction after June 12, 2006.

401 KAR 63:002, Section 2(4)(eeee), **40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ)**, *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, applies to stationary RICE located at a major or area source of HAP emissions.

Note: D.C. Circuit Court [*Delaware v. EPA*, 785 F. 3d 1 (D.C. Cir. 2015)] has vacated the provisions in 40 CFR 63, Subpart ZZZZ and 40 CFR 60, Subpart IIII that contain the 100-hour exemption for operation of emergency engines for purposes of emergency demand response under 40 CFR 63.6640(f)(2)(ii)-(iii) and 40 CFR 60.4211(f)(2)(ii)-(iii). The D.C. Circuit Court issued the mandate for the vacatur on May 4, 2016.

Comments:

Emissions are calculated using emission factors from AP42- Tables 3.3-1, 3.3-2, and 40 CFR 98 Tables C-1 and C-2, and an assumption of 500 hrs/yr to be conservative and account for emergency operation.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS (CONTINUED)

Testing Requirements/Results

Emission Point(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
EP #01 (Reverb Furnace #2)	Lime-Inj. Baghouse	D/F	40 CFR 63.1505(i)(3)	Initial; as needed	Method 23	2.1×10^{-4} gr/ton	2.5×10^{-7} gr/ton	Al Feed Rate: 3.398 tons/hr for one furnace	CMN20060001	1/10/2006
		HCl	401 KAR 52:030		Method 26A	---	0.00693 lb/hr			
EP #01 (Reverb Furnaces #1 & #2)	Lime-Inj. Baghouse	D/F	40 CFR 63.1505(i)(3)	Initial; as needed	Method 23	2.1×10^{-4} gr/ton	1.84×10^{-7} gr/ton	Al Feed Rate: 6.302 tons/hr for two furnaces	CMN20060002	7/24/2006
		HCl	401 KAR 52:030		Method 26A	---	0.01027 lb/hr			
EP #01 (Reverb Furnaces #1 & #2)	Lime-Inj. Baghouse	D/F	40 CFR 63.1505(i)(3)	Initial; as needed	Method 23	15 μ g/Mg	0.10 μ g/Mg	Al Feed Rate: 11.52 Mg/hr	CMN20100001	8/10/2010
		HCl	401 KAR 52:030		Method 26A	N/A	0.2641 lb/hr			
		HCl	401 KAR 52:030		Method 26	N/A	0.26 lb/hr; 0.016 lb/ton			
EP #01 (Rotary Furnace)	Lime-Inj. Baghouse	HCl	401 KAR 52:030	Initial; as needed	Method 26	N/A	0.24 lb/hr	Al Feed rate: 25520 lb/hr; flux percent: 20.1%; lime inj. rate: 10.4 lb/hr	CMN20140001	4/8/2014
		D/F	40 CFR 63.1505(i)(3)		Method 23	15 μ g/Mg	0.21 μ g/Mg	Al Feed rate: 6947 lb/hr; baghouse inlet temp: 136°F		

Emission Point(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
EP #01 (Rotary Furnace)	Lime-Inj. Baghouse	D/F	40 CFR 63.1505(i)(3)	Initial; as needed	Method 23	15 µg/Mg	0.24 µg/Mg	Al Feed rate: 7383 lb/hr; baghouse inlet temp: 199°F; Processing aluminum dross & reactive flux	CMN20140002	8/19/2014
							0.84 µg/Mg	Al Feed rate: 7106 lb/hr; baghouse inlet temp: 180°F; Processing high organic scrap		
EP #01 (Reverb Furnaces #1 & #2)	Lime-Inj. Baghouse	D/F	40 CFR 63.1505(i)(3)	Initial; as needed	Method 23	15 µg/Mg	0.076 µg/Mg	Al Feed rate: 33515 lb/hr; lime inj. rate: 10 lb/hr; chlorine charge rate: 0.34 lb/ton; baghouse inlet temp: 134.9°F;	CMN20150001	8/11/2015

Emission Point(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
EP #01 (Rotary Furnace)	Baghouse	D/F	40 CFR 63.1505(i)(3)	Initial; as needed	Method 23	15 µg/Mg	0.51 µg/Mg	Al Feed rate: 6945 lb/hr; flux percent: 20%; baghouse inlet temp: 172°F; Processing aluminum dross & reactive flux	CMN20190001	8/13/2019
		HCl	401 KAR 52:030		Method 26	2.28 lb/hr	0.35 lb/hr; 0.11 lb/ton			
		D/F	40 CFR 63.1505(i)(3)		Method 23	15 µg/Mg	0.64 µg/Mg	Al Feed rate: 7052 lb/hr; flux percent: 5.1%; baghouse inlet temp: 167°F Processing high organic scrap		

Footnotes:

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS

Table A - Group Requirements:

Emission and Operating Limit	Regulation	Emission Point
90 tpy of PM/PM ₁₀ /PM _{2.5}	To preclude 401 KAR 52:020, <i>Title V permits</i>	Source-wide
9.0 tpy of individual HAP	To preclude major source status for HAP	Source-wide
22.5 tpy of combined HAPs	To preclude major source status for HAP	Source-wide
15 µg of D/F TEQ per Mg	40 CFR 63.1505(i)(3)	01 (SAPU)

Table B - Summary of Applicable Regulations:

Applicable Regulations	Emission Point
401 KAR 59:010, <i>New process operations</i> , applies to each affected facility or source, associated with a process operation, which is not subject to another emission standard with respect to particulates in 401 KAR Chapter 59, commenced on or after July 2, 1975.	01
401 KAR 63:002, Section 2(4)(ccc), 40 C.F.R. 63.1500 to 63.1519, Tables 1 to 3 and Appendix A (Subpart RRR) , <i>National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production</i> , applies to each new secondary aluminum processing unit, containing one or more group 1 furnace emission units processing other than clean charge located at a secondary aluminum production facility that is an area source of HAPs as defined in 40 CFR 63.2.	01
401 KAR 60:005, Section (2)(2)(dddd), 40 C.F.R. 60.4200 to 60.4219, Tables 1 to 8 (Subpart IIII) , <i>Standards of Performance for Stationary Compression Ignition Internal Combustion Engines</i> , applies to stationary compression ignition (CI) internal combustion engines (ICE) that commence construction after June 12, 2006.	03
401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ) , <i>National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE)</i> , applies to stationary RICE located at a major or area source of HAP emissions.	03

Table C - Summary of Precluded Regulations:

Precluded Regulations	Emission Point
401 KAR 52:020, <i>Title V permits</i>	Source-wide

Table D - Summary of Non Applicable Regulations:

N/A

Air Toxic Analysis

N/A

Single Source Determination

Based on the Division's review of KST's application, source file, and other relevant information, it appeared that KST (Source ID # 21-017-00034, A.I. # 51005) and the adjacent plant, Central Motor Wheel of America (CMWA) (Source ID # 21-017-00025, A.I. 290) are a single source

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pursuant to the definition in 401 KAR 52:001, Section 1(45). The combined emissions of both facilities exceed the major source threshold as defined in 401 KAR 52:001, Section 1(46).

However, based on the information provided to the Division on September 15, 2020, these two entities do not share a common control relationship and they do not meet the definition of single source for the following reasons:

- They belong to a different industrial grouping. KST's production is geared around Secondary smelting and alloying of aluminum (SIC Code 3354) whereas CMWA manufactures motor vehicle parts and accessories (SIC Code 3714); and
- Although CMWA controls the amount of aluminum sent from KST to its die casters, they do not control KST's management, operations, or environmental compliance.

If the relationship between these two entities were to change such that they become commonly controlled, the Division will reevaluate its position. Accordingly, based on available information, the Division has determined that these two entities constitute separate sources under regulation and will be treated as such.

SECTION 5 – PERMITTING HISTORY

Permit	Permit type	Activity#	Complete Date	Issuance Date	Summary of Action	PSD/Syn Minor
F-04-037	Initial	APE20040002	9/8/2004	5/3/2005	Initial Construction Permit	N/A
F-10-009	Renewal	APE20090001	1/22/2010	9/1/2010	Permit Renewal	N/A
F-10-009 R1	Minor Revision	APE20120002	8/7/2012	8/28/2012	Addition of an emergency diesel fire generator (713 HP) and new emission factor for HCl	N/A
F-10-009 R2	Minor Revision	APE20130001	10/22/2013	3/22/2014	Addition of one rotary melting furnace along with fluxing and charging conveyor	N/A
F-15-025	Renewal	APE20150001	6/22/15	10/26/2015	Permit Renewal, removal of 268 HP backup emergency generator	N/A
F-15-025 R1	Minor Revision	APE20180002	10/12/2018	11/11/2018	Replacing the existing 713 HP diesel emergency generator with a new 804.3 HP diesel emergency generator	N/A

SECTION 6 – PERMIT APPLICATION HISTORY

None.

APPENDIX A – ABBREVIATIONS AND ACRONYMS

AAQS	– Ambient Air Quality Standards
BACT	– Best Available Control Technology
Btu	– British thermal unit
CAM	– Compliance Assurance Monitoring
CO	– Carbon Monoxide
Division	– Kentucky Division for Air Quality
ESP	– Electrostatic Precipitator
GHG	– Greenhouse Gas
HAP	– Hazardous Air Pollutant
HF	– Hydrogen Fluoride (Gaseous)
MSDS	– Material Safety Data Sheets
mmHg	– Millimeter of mercury column height
NAAQS	– National Ambient Air Quality Standards
NESHAP	– National Emissions Standards for Hazardous Air Pollutants
NO _x	– Nitrogen Oxides
NSR	– New Source Review
PM	– Particulate Matter
PM ₁₀	– Particulate Matter equal to or smaller than 10 micrometers
PM _{2.5}	– Particulate Matter equal to or smaller than 2.5 micrometers
PSD	– Prevention of Significant Deterioration
PTE	– Potential to Emit
SO ₂	– Sulfur Dioxide
TF	– Total Fluoride (Particulate & Gaseous)
VOC	– Volatile Organic Compounds